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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/086,472	02/28/2002	Tomowaki Takahashi	4641-62398	3196

7590 07/11/2003

KLARQUIST SPARKMAN, LLP
Suite 1600
One World Trade Center
121 S.W. Salmon Street
Portland, OR 97204

[REDACTED] EXAMINER

NGUYEN, THONG Q

[REDACTED] ART UNIT [REDACTED] PAPER NUMBER

2872

DATE MAILED: 07/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/086,472	TAKAHASHI, TOMOWAKI
	Examiner Thong Q. Nguyen	Art Unit 2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 18 March 2003.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 20-55 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) Claim(s) ____ is/are allowed.
- 6) Claim(s) 20-55 is/are rejected.
- 7) Claim(s) ____ is/are objected to.
- 8) Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on ____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on 18 March 2003 is: a) approved b) disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. ____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____ . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>6</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The present Office action is made in response to the amendment (Paper No. 7) of 3/18/2003. It is noted that in the mentioned amendment, applicant has added a new set of claims, i.e., claims 36-55, into the application. As a result, the pending claims are claims 20-55.

Drawings

2. The corrected or substitute drawings were received on 3/18/2003. These drawings are approved by the Examiner.

Specification

3. The lengthy specification which is amended has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 20-55 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to

one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

- a) Each of claims 20 and 28 is rejected under 35 USC 112, first paragraph because the disclosure, as originally filed, does not provide support for the features relating to "Off-axis" and the formation of image being displaced from the optical axis as recited in the newly-added materials to each of claims 20 and 28 and the newly-added claim 55.
- b) Each of claims 21 and 29 is rejected under 35 USC 112, first paragraph because the disclosure, as originally filed, does not provide support for the feature thereof "a maximum image-side...of 0.6" as recited. Applicant should note that the specification discloses an embodiment in which the image-side numerical aperture is 0.6 (see page 12); but the disclosure as originally filed, has never taught that the numerical aperture of 0.6 is a maximum image-side numerical aperture.
- c) Claim 55 is rejected under 35 USC 112, first paragraph for the same reason as set forth in element a) above. Further, the claim is rejected because the disclosure, as originally filed, does not teach an off-axis system having a catadioptric system situated between a first image conjugate point and a second image conjugate point as recited on lines 3-4 of the claim.
- d) The remaining claims are dependent upon the rejected base claims and thus inherit the deficiencies thereof.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claim 55 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 55 is rejected under 35 USC 112, second paragraph because the arrangement of the refractive system and the catadioptric system for forming image as recited is unclear. It is unclear about the structural relationship among the object, the first image conjugate point, the second image conjugate point and the image on the surface as recited I the feature thereof "a catadioptric...the surface". The examiner is of opinion that the mentioned feature is misdescriptive of the invention as taught in the specification because the specification discloses that the catadioptric system forms an intermediate image of an object and then the refractive system forms an image of the intermediate image on a surface.

Double Patenting

8. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

9. Claims 20, 23, 25-28, 31, 33-50, 52, 54 and 55, as best as understood, are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-16 of U.S. Patent No. 5,805,334 in view of Palmer (U.S. Patent No. 4,714,307) and Schoenmakers (U.S. Patent No. 5,323,263) (all of record).

Claims 1-16 of the Patent '334 issued to the same inventor of the present application disclose all of the elements as well as their structure as those of the device claimed except the feature that the catadioptric system and/or the refractive system has an aspheric surface, and the whole system is an off-axis system so that an intermediate image is displaced from the optical axis.

It is noted that the use of a catadioptric system for forming an image of an object onto a surface wherein the system is an off-axis system and the intermediate image is displaced from the optical axis of the system is known to one skilled in the art as can be seen in the off-axis catadioptric system provided by Schoenmakers. See columns 2-4 and fig. 1, for example. It is also noted that the use of at least one aspheric surface in a system having a catadioptric system and a refractive system for correcting the image aberration is known to one skilled in the art. Palmer discloses an optical device comprises a catadioptric system and a refractive system. The catadioptric system comprises at least one mirror and one lens for forming an image of an object, and the refractive system comprises three lens elements for forming an image of the intermediate image to be viewed/observed by a user. In column 3, lines 44-47, Palmer suggests that the mirror and lens surfaces can be made as aspheric surfaces. Thus, it

would have been obvious to one skilled in the art at the time the invention was made to modify the system as claimed in claims 1-16 of the Patent '334 by using the system defined in the claims 1-16 of the Patent '334 as an off-axis system as suggested by Schoenmakers and using at least one aspheric surface for the mirror and lens as suggested by Palmer for the purpose of increasing the ability of image correction.

10. Claims 20, 23-28, 31-52 and 54-55, as best as understood, are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-16 of U.S. Patent No. 5,805,334 in view of Schoenmakers (U.S. Patent No. 5,323,263), Palmer (U.S. Patent No. 4,714,307) and Friedman (U.S. Patent No. 4,779,966) (all of record).

Claims 1-16 of the Patent '334 issued to the same inventor of the present application disclose all of the elements as well as their structure as those of the device claimed except the feature that the system is an off-axis system having an intermediate image being displaced from the optical axis. The claims also do not disclose that the feature that the catadioptric system and/or the refractive system has an aspheric surface, and the feature that the refractive system has an aperture stop.

Regard to the arrangement of a system in an off-axis manner, it is noted that the use of a catadioptric system for forming an image of an object onto a surface wherein the system is an off-axis system and the intermediate image is displaced from the optical axis of the system is known to one skilled in the art as can be seen in the off-axis catadioptric system provided by Schoenmakers. See columns

2-4 and fig. 1, for example. It is also noted that the use of at least one aspheric surface in a system having a catadioptric system and a refractive system for correcting the image aberration is known to one skilled in the art. Palmer discloses an optical device comprises a catadioptric system and a refractive system. The catadioptric system comprises at least one mirror and one lens for forming an image of an object, and the refractive system comprises three lens elements for forming an image of the intermediate image to be viewed/observed by a user. In column 3, lines 44-47, Palmer suggests that the mirror and lens surfaces can be made as aspheric surfaces. Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the system claimed in claims 1-16 of the Patent '334 by using the system defined in the claims 1-16 of the Patent '334 as an off-axis system as suggested by Schoenmakers and using at least one aspheric surface for the mirror and lens as suggested by Palmer for the purpose of increasing the ability of image correction.

Regard to the use of an aperture stop, it is also noted that such use of an aperture stop in a refractive system is suggested to one skilled in the art as can be seen in the system provided by Friedman. In columns 3-4 and fig. 4, Friedman discloses a system having a front reflective system and a rear catadioptric system and teaches the use of a stop inside the refractive system. Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the combined product as provided in the claims 1-16 of the Patent '334, Schoenmakers and Palmer by using a

- stop inside the refractive system as suggested by Friedman for the purpose of controlling the size/dimension of the light forming the image.

Response to Arguments

11. Applicant's arguments with respect to claims 20-35 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

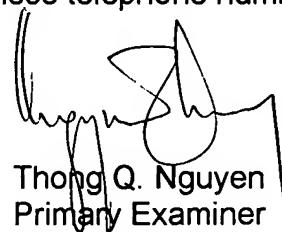
Application/Control Number: 10/086,472
Art Unit: 2872

Page 9

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thong Q. Nguyen whose telephone number is (703) 308-4814. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew A Dunn can be reached on (703) 305-0024. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 0956.



Thong Q. Nguyen
Primary Examiner
Art Unit 2872

July 9, 2003